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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

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  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document describes the test procedure for the radiated performances measurements of the 3G/2G user equipment/mobile stations (UE/MS) in active mode in both the uplink and the downlink. The FDD UE test procedure is based on the test method developed as a result of COST 273 Sub-Working Group (SWG) 2.2 members' contributions. Background work has also been made in the former COST259 project. The TDD UE test procedure is based on the test method developed as a result of CCSA TC9 WG1 members' contributions. Background work has been made in the former CCSA TC9 project.

The measurement procedure explained in this document applies to UE/MS used under the "speech mode" conditions that correspond to predefined positions for voice application when the handset is held close to the user's head. This method is also applicable to free space measurements for UE/MS devices. The data transfer position (free space) explained in this document applies when the UE is used away from the user's head. For LME and LEE devices free space configuration without head and hand phantoms is applicable. Free space measurements are applicable to devices used in the data transfer position that consist of the laptop mounted equipment (LME) plug-in UEs and laptop embedded equipment (LEE) UEs.

The tests apply to UEs and laptops using single or multiple receive antennas. For GSM technology this is applicable to all MSs and for 3G technology this is applicable to "one antenna" UEs and "RxDiversity" UEs.

The testing methodology applies to any single or multi-mode (GSM / UMTS / TD-SCDMA) terminals.

The radio tests considered here are:

1. The measurement of the Total Radiated Power (TRP)
2. The measurement of the Total Radiated Sensitivity (TRS)

The test procedure described in this document measures the performance of the transmitter and the receiver, including the antenna and also the effects of the user.

The major parts of this test procedure are based on the 3-D pattern measurement method. It has been considered necessary to define some items and components in the test procedure in detail, such as test channels and phantom set-ups, in order to make the testing in different laboratories harmonized. The procedure is, however, not limited to some specific antenna chambers or positioners.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] to [13] (void)

[14] 3GPP TS 34.114 Release 12: "User Equipment (UE) / Mobile Station (MS) Over The Air (OTA) antenna performance; Conformance testing"

3 Definitions, symbols, abbreviations and equations

Void

4 General

The requirements of the present document are provided in 3GPP TS 34.114 Release 12 [14].

5 to 6 Void

Annex A to I: Void

Annex J (informative): Change history

Meeting-1st-Level	Doc-1st-Level	CR	Rev	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level
RP-37	RP-070665	-	-	TS 34.114 for information	-	-	1.0.0	R5-072420
RP-41	RP-080612	-	-	New version of 34.114	-	1.0.0	7.0.0	R5-083817
RP-43	RP-090203	0001	-	Update of TS 34.114 from Rel-7 to Rel-8		7.0.0	8.0.0	R5-090761
RP-43	RP-090203	0002	-	Addition of Band V,VI and VIII minimum & test requirements to 34.114		8.0.0	8.1.0	R5-090412
RP-45	RP-090813	0003	-	TDD UE over the Air conformance testing methodology	-	8.1.0	8.2.0	R5-094961
RP-46	RP-091119	0004	-	Over The Air antenna performance: New informative Annex for Recommended performance	-	8.2.0	8.3.0	R5-096254
RP-47	-	-	-	Moved to v9.0.0 with no change	-	8.3.0	9.0.0	-
RP-51	RP-110166	0005	-	OTA FDD Band 4 and 5 Mid Test Channel Change	F	9.0.0	9.1.0	R5-110530
RP-51	RP-110166	0006	-	CR to 34.114 : Addition of the GSM OTA requirements and recommended values	F	9.0.0	9.1.0	R5-110926
RP-53	RP-111157	0007	-	Update on abbreviation list in section 3.2	F	9.1.0	9.2.0	R5-113442
RP-53	RP-111157	0008	-	Addition of Scope to include Laptop Equipment Free Space	F	9.2.0	10.0.0	R5-114067
RP-53	RP-111157	0009	-	Addition of DUT positioning for Laptop Equipment Free Space transmitter	F	9.2.0	10.0.0	R5-114068
RP-53	RP-111157	0010	-	Addition of DUT positioning for Laptop Equipment Free Space receiver performance	F	9.2.0	10.0.0	R5-114069
RP-54	RP-111636	0012	-	Introduction of alternative measurement procedure in TS 34.114	F	10.0.0	10.1.0	R5-115890
RP-54	RP-111636	0012	-	Added missing changes of R5-115890 from Annex B onwards.	F	10.1.0	10.1.1	R5-115890
RP-55	RP-120184	0013	-	Correction to TRP and TRS Tests	F	10.1.1	10.2.0	R5-120429
RP-55	RP-120204	0014	-	Corrections to Abbreviations for Laptop Equipment Free Space	F	10.2.0	11.0.0	R5-120468
RP-55	RP-120204	0015	-	Introduction of LME & LEE for Measurement Test Report	F	10.2.0	11.0.0	R5-120477
RP-55	RP-120204	0016	-	Introduction of Maximum Uncertainty of Test System and TT for LME	F	10.2.0	11.0.0	R5-120478
RP-55	RP-120204	0017	-	Introduction of Recommended OTA Performance for Operating Bands for LME & LEE	F	10.2.0	11.0.0	R5-120479
RP-55	RP-120204	0018	-	Introduction of Tx Performance of TRP for LME FDD	F	10.2.0	11.0.0	R5-120865
RP-55	RP-120204	0019	-	Introduction of Tx Performance of TRP for LME TDD	F	10.2.0	11.0.0	R5-120866
RP-55	RP-120204	0020	-	Introduction of Rx Performance of TRS for LME FDD	F	10.2.0	11.0.0	R5-120867
RP-55	RP-120204	0021	-	Introduction of Rx Performance of TRS for LME TDD	F	10.2.0	11.0.0	R5-120868
RP-55	RP-120204	0022	-	Introduction for Characteristics of the Laptop Ground Plane Phantom Specification	F	10.2.0	11.0.0	R5-120869
RP-55	RP-120204	0023	-	Introduction of LME & LEE for Calibration Procedure	F	10.2.0	11.0.0	R5-120870
RP-55	RP-120204	0024	-	Corrections to DUT positioning for Laptop Equipment Free Spac Performance	F	10.2.0	11.0.0	R5-120871
RP-55	RP-120204	0025	-	CR for new FDD OTA Test cases 5.6, 5.8, 5.9, 6.6, 6.8 & 6.9 for LME and LEE devices	F	10.2.0	11.0.0	R5-120872
RP-55	RP-120204	0026	-	Corrections to Scope related to Laptop Equipment Free Spac	F	10.2.0	11.0.0	R5-120873
RP-56	RP-120668	0028	-	Corrections to Scope related to Laptop Equipment Free Space Definition	F	11.0.0	11.1.0	R5-121342
RP-56	RP-120668	0029	-	Additional Clarifications to DUT positioning for Laptop Equipment Free Space Performance	F	11.0.0	11.1.0	R5-121343
RP-56	RP-120668	0030	-	Corrections to Tx Performance of TRP for LME GSM	F	11.0.0	11.1.0	R5-121345
RP-56	RP-120668	0031	-	Corrections to Tx Performance of TRP for LME TDD	F	11.0.0	11.1.0	R5-121346
RP-56	RP-120668	0032	-	Corrections to Tx Performance of TRP for LEE GSM	F	11.0.0	11.1.0	R5-121347
RP-56	RP-120668	0033	-	Introduction of Tx Performance of TRP for LEE TDD	F	11.0.0	11.1.0	R5-121348
RP-56	RP-120668	0034	-	Corrections to Rx Performance of TRS for LME FDD	F	11.0.0	11.1.0	R5-121349
RP-56	RP-120668	0035	-	Clarifications to TRS Requirements for Roaming Bands for conformance testing	F	11.0.0	11.1.0	R5-121362
RP-56	RP-120668	0036	-	Introduction of Embedded Devices Characteristics	F	11.0.0	11.1.0	R5-121363
RP-56	RP-120668	0037	-	Clarifications to LME & LEE for Calibration Procedure	F	11.0.0	11.1.0	R5-121368
RP-56	RP-120668	0038	-	Clarifications to LME & LEE for Measurement Test Report	F	11.0.0	11.1.0	R5-121372
RP-56	RP-120668	0039	-	Clarifications to Maximum Uncertainty of Test System and TT for LME	F	11.0.0	11.1.0	R5-121373
RP-56	RP-120668	0040	-	Clarifications to Recommended OTA Performance for Operating Bands for LME & LEE	F	11.0.0	11.1.0	R5-121374
RP-56	RP-120668	0041	-	Clarification to TRP and TRS Requirements for Band (XIX)	F	11.0.0	11.1.0	R5-121375
RP-56	RP-120668	0042	-	Clarifications to Statistical Uncertainty of the BER measurement for GSM	F	11.0.0	11.1.0	R5-121376
RP-56	RP-120668	0043	-	Corrections to Tx Performance of TRP for LME FDD	F	11.0.0	11.1.0	R5-121912

Meeting-1st-Level	Doc-1st-Level	CR	Rev	Subject	Cat	Version-Current	Version-New	Doc-2nd-Level
RP-56	RP-120668	0044	-	Corrections to Rx Performance of TRS for LME GSM	F	11.0.0	11.1.0	R5-121913
RP-56	RP-120668	0045	-	Corrections to Rx Performance of TRS for LEE GSM	F	11.0.0	11.1.0	R5-121914
RP-56	RP-120668	0046	-	Corrections to Rx Performance of TRS for LME TDD	F	11.0.0	11.1.0	R5-121978
RP-56	RP-120668	0047	-	Introduction of Rx Performance of TRS for LEE TDD	F	11.0.0	11.1.0	R5-121979
RP-57	RP-121121	0048	-	Clarifications to User Equipment (UE) and Mobile State (MS) over the air performance requirements	F	11.1.0	11.2.0	R5-123140
RP-57	RP-121121	0049	-	Corrections to recommended OTA performance for operating bands	F	11.1.0	11.2.0	R5-123141
RP-57	RP-121121	0050	-	Introduction of Estimation of Measurement Uncertainty for LME & LEE	F	11.1.0	11.2.0	R5-123965
RP-57	RP-121121	0051	-	Clarifications to examples of uncertainty budget calculations for LME & LEE	F	11.1.0	11.2.0	R5-123966
RP-58	RP-121687	0052	-	Corrections to Uncertainty related to the use of Phantoms	F	11.2.0	11.3.0	R5-125411
RP-58	RP-121687	0053	-	Corrections to Random Uncertainty	F	11.2.0	11.3.0	R5-125412
RP-58	RP-121687	0054	-	Corrections to Scope related to UEs and laptops using the SISO/SIMO mode	F	11.2.0	11.3.0	R5-125414
RP-58	RP-121687	0055	-	Clarifications to Receiver Performance for SIMO mode	F	11.2.0	11.3.0	R5-125415
RP-58	RP-121687	0056	-	Modification to Uncertainty contributions for LME & LEE	F	11.2.0	11.3.0	R5-125838
RP-58	RP-121687	0057	-	Corrections to examples of uncertainty budget calculations	F	11.2.0	11.3.0	R5-125839
RP-70	RP-151696	0061	-	Removal of technical content in 34.114 v11.3.0 and substitution with pointer to the next Release	F	11.3.0	11.4.0	R5-155026

History

Document history		
V11.2.0	October 2012	Publication
V11.3.0	January 2013	Publication
V11.4.0	January 2016	Publication